

REMARKS

Claims 1-17, 20-27, 29-31 and 33-42 are pending in the present application. Claims 17, 20-27, 29-31 and 33 are rejected. Claims 17, 20, 21, 23 and 25 are herein amended. Applicants' Representative thanks Examiners Crow and Shukla for the courtesies extended in the personal interview of June 12, 2007. Applicants' Statement of the Substance of the Interview is incorporated herein.

Applicants' Response to Claim Objections

Claim 17 was objected to because it included an apparent typographical error. Applicants herein amend claim 17 in order to correct this typographical error. Favorable reconsideration is respectfully requested.

Applicants' Response to Claim Rejections under 35 U.S.C. §112

Claims 20 and 33 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention.

The Office Action notes that claims 20 and 33 recite "an array which includes a marker indicative of a spot." The Office Action states that it is unclear if the "array which includes a marker indicative of a spot" is the double stranded oligonucleotide array of independent claims 17 and 21.

Upon review of the specification, it appears that claim 20 was intended to refer to the same “array” as claim 17. Accordingly, Applicants herein amend claim 20 to recite that “said double-stranded oligonucleotide array used in said measuring includes a marker indicative of a spot.” However, claim 21 does not recite “an array,” and thus it is not necessary to amend claim 33. Favorable reconsideration is respectfully requested.

Applicants’ Response to Claim Rejections under 35 U.S.C. §103

Claims 17, 21-27 and 29-30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Corn et al. (U.S. Patent No. 6,127,129) in view of Fodor et al. (U.S. Patent No. 5,424,186).

It appeared to be the position of the Office Action that Corn discloses the invention as claimed, with the exception of teaching a hydrophilic repeating unit of the polymer. The Office Action appeared to rely on Fodor to provide this teaching. However, in the personal interview of June 12, 2007, the Examiner clarified that Fodor was relied upon to teach the entire linker, and that no combination of components of the linkers of Corn and Fodor is proposed. Rather, it was argued that it would have been obvious to utilize the entire linker of Fodor in the system of Corn.

The “linker” of Fodor is disclosed to be ethylene glycol oligomers containing 2-10 monomers. See column 14, lines 32-35. Fodor also discloses attaching the linkers by carbon-carbon bonds using (poly)trifluorochloroethylene surfaces. Additionally, Fodor discloses many possible protecting groups attached to the end of the linker. See column 15, line 35 to column

16, line 52. Thus it is the position of the Office Action that would have been obvious to replace the entire linker of Corn with the linker of Fodor (polyethylene glycol-based).

In order to succinctly summarize the subject matter of the present invention, Corn and Fodor, Applicants submit the following chart.

	A preferred embodiment of the present invention	Corn	Fodor
Cross-linking agent	Heterobifunctional	heterobifunctional	Not disclosed
	R	Hydrophobic	Hydrophilic
	$-(O - R_1)_n-$, n= preferably 20 to 225 R ₁ = an alkylene group	SSMCC	Polyethylene glycol having 2-10 monomer units
	X	-SH	Not specifically disclosed
	Y	-NH ₂	Not specifically disclosed
Background	Hydrophilic polymer	Hydrophilic polymer	Not disclosed
First biomolecule	Double-stranded oligonucleotide	Single-stranded oligonucleotide	Single-stranded oligonucleotide
Measuring method	SPR	SPR	Fluorescence
Array surface	Gold layer	Gold layer	Glass

Applicants herewith submit the attached Kyo reference, which corresponds to the data in the present application. Kyo evaluated the MafG interaction with Maf recognition element arrays by SPR. Kyo compared hydrophilic NHS-PEG-MAL (molecular weight 3400) with hydrophobic SSMCC which is used in Corn et al. (Figure 3). In Figure 3B, a robust increase of SPR signal

was observed for MARE25 on the NHS-PEG-MAL immobilized array. On the contrary, the increase in SPR signal was not observed for MARE25 on the SSMCC-immobilized array (Figure 3A). This evidence illustrates that hydrophilic NHS-PEG-MAL (MW 3400) is important for measuring of the interaction between a first biomolecule and a second biomolecule. Thus, Applicants discovered via experimentation that the claimed cross linking agent is optimal for SPR.

Applicants respectfully submit that it would not have been obvious to combine the Fodor's teaching of a hydrophilic linker with Corn's teaching of attaching a single-stranded oligonucleotide and the use of SPR. Corn's linker is hydrophobic, but Fodor's linker is hydrophilic. This difference is fatal to the combination of Corn and Fodor. The Office Action has provided to no reason why one having ordinary skill in the art would have been motivated to modify Corn by including an hydrophilic linker instead of a hydrophobic linker.

In addition, Fodor does not include a thin gold layer, which is essential for SPR. Thus, the array and linker of Fodor cannot be used for SPR. Accordingly, it would not have been obvious to utilize a linker from an array which does not use SPR in a system which does utilize SPR. Therefore, in view of the above comments, Applicants respectfully submit that it would not have been obvious to one having ordinary skill in the art to combine Corn and Fodor to arrive at the invention as claimed. Favorable reconsideration is respectfully requested.

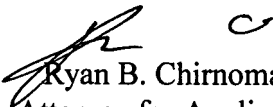
For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Amendment
Serial No. 10/756,767
Attorney Docket No. 032084

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP


Ryan B. Chirnomas
Attorney for Applicants
Registration No. 56,527
Telephone: (202) 822-1100
Facsimile: (202) 822-1111

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Enclosure: Motoki KYO, et al. "Evaluation of MafG interaction with Maf recognition element arrays by surface plasmon resonance imaging technique," *Genes to Cells* (2004) 9, 153-164.